

A NEW SPECIES OF *PERMITHONE* (NEUROPTERA PLANIPENNIA) FROM THE
UPPER PERMIAN OF NEW SOUTH WALES.

By CONSETT DAVIS, D.Sc., Lecturer in Biology, New England University College,
Armidale.

(Plate i; one Text-figure.)

[Read 31st March, 1943.]

Family PERMITHONIDAE Tillyard, 1922.

PROC. LINN. SOC. N.S.W., xlvii, 289.

Genus PERMITHONE Tillyard, 1922, l.c.

Genotype: *Permithone belmontensis* Tillyard 1922, l.c., Fig. 6, and Pl. xxxiii, fig. 3.

PERMITHONE VENOSA, n. sp. (Pl. i and Fig. 1.)

Forewing larger than in the genotype, and with more numerous veins and cross-veins.

Length 13.8 mm.; maximum breadth 5.8 mm.

R_1 and Sc subparallel for most of course, confluent at three-quarters the wing-length, the confluent vein reaching the margin just before the termen; basad and inclusive of it there are 42 veinlets preserved, and eight more estimated for the lost basal region, a total of 50; these include four pairs of veinlets each arising from Sc by a common stem and forking, the remainder arising singly. Base of R_s lost, but origin before one-quarter the wing-length; R_s reaching the margin as 26 veins, given off posteriorly as a pectinate series of ten veins, of which two are simple, eight forked one or more times. Base of M lost; first fork of M at one-third the wing-length; M reaching the margin as eight veins; Cu_1 forked at one-seventh the wing-length, anterior branch (Cu_{1a}) 4-branched, posterior (Cu_{1b}) simple. Cu_2 simple, straight, weak, parallel to and just above 1A, not reaching the margin. 1A once forked near the margin. 2A simple,

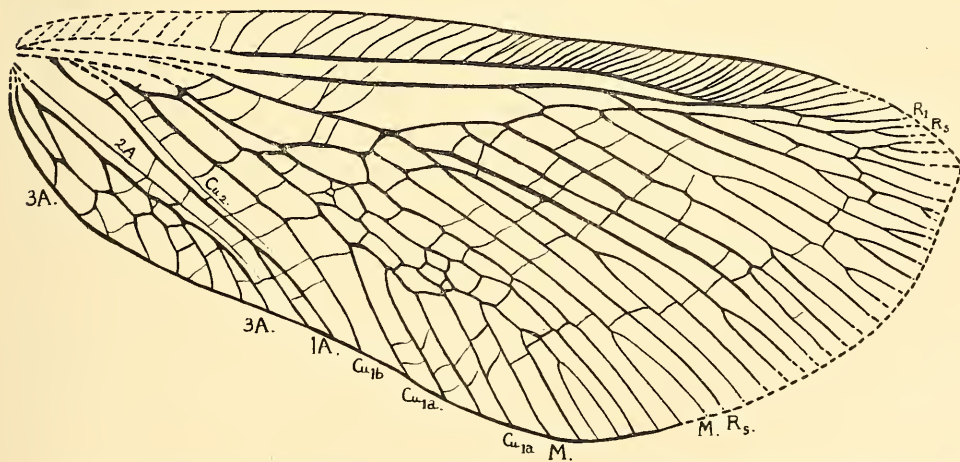


Fig. 1.—*Permithone venosa*, n. sp., holotype forewing. $\times 9$, dotted portions reconstructed. (Probably the left forewing in ventral aspect.) Prepared with camera lucida.

straight, weak, parallel to and just above 3A, not reaching the margin. 3A forming a plexus, of which nine veinlets reach the margin. Cross-veins numerous and rather irregular, throughout the wing. Hindwing and other structures unknown.

Unique holotype forewing (Aust. Mus. No. F39867) collected in Upper Permian shale in a cutting approximately half a mile along the Violettown Road, about two and a half miles east of Warner's Bay, Lake Macquarie, New South Wales, by Mr. O. Le M. Knight, to whom my thanks are due for opportunity to study this very interesting specimen.

Nomenclature of the Veins.

It would seem more in conformity with previous work on the Planipennia to disregard the weak veins here labelled Cu_2 and 1A, and to name the vein here classed as Cu_{1b} , Cu_2 ; the last veinlet of the plexus here classed as 3A would then alone be classed as 3A, the remainder as 2A. Explanation of the contrary course adopted herein is necessary.

The holotype appears to represent the ventral aspect of a forewing. The vein Sc is a groove along the crest of a convex fold in the block; the base of M, and R_s (especially its distal part running below and parallel to R_1), have a similar conformation. On the other hand, R_1 , Cu_{1a} , Cu_{1b} , 1A and 3A are represented by grooves running along concave troughs in the block. Cu_2 and 2A represent the summits of convex longitudinal folds, without the apical groove found in Sc.

On the present interpretation, then, Sc, R_s , M (MP), Cu_2 and 2A are concave (in dorsal view), while R_1 , Cu_1 , 1A and 3A are convex, as generally accepted. Since Planipennian wings are ideal for the preservation and observation of convexity of veins, this evidence cannot be disregarded, and, if it is accepted, the course adopted is the only consistent one.

With reference to recent Neuroptera, Tillyard (1926, p. 310) says: "In many forms the consecutive branches of main veins are separated by definite furrows in the membrane; of these, one between R_s and M, and one between M and Cu_1 , are most clearly defined." The same author (op. cit., Fig. U9) indicates a similar fold posterior to the vein there classified as Cu_2 . It seems unlikely that the definite veins classed as Cu_2 and 2A in *Permithone venosa* represent mere furrows in the membrane, but rather that in some recent forms such furrows should be classed as definite veins (for instance, Cu_2 , the vein now classed as Cu_2 being really Cu_{1b}). Further study of fossil types, with special reference to alternating concavity and convexity of main veins, should decide this point in the venation of recent Neuroptera; the trace of a convex vein MA may also be indicated.

List of References.

- TILLYARD, R. J., 1922.—Some New Permian Insects from Belmont, N.S.W., in the Collection of Mr. John Mitchell. PROC. LINN. SOC. N.S.W., 47: 279-292, Pls. xxxiii-xxxiv.
 ———, 1926.—The Insects of Australia and New Zealand. Angus and Robertson, Sydney.

EXPLANATION OF PLATE I.

Permithone venosa, n. sp., holotype forewing, $\times 6$.